

Making Mixed Oxide Lead Fuel Assemblies for the U.S. Plutonium Disposition Program

To reduce the threat of terrorists or rogue nations obtaining nuclear weapon materials, the United States and Russia will dispose of 68 metric tons of surplus weapon-grade plutonium – enough for thousands of nuclear weapons. Both countries will dispose of their plutonium by converting it to mixed oxide (MOX) fuel for use in existing nuclear reactors. Once the MOX fuel is used in the reactors, it is no longer readily usable for nuclear weapons. In order to dispose of surplus U.S. plutonium, the Department of Energy's National Nuclear Security Administration (NNSA) will build two facilities at the Savannah River Site near Aiken, South Carolina – a Pit Disassembly and Conversion Facility and a MOX Fuel Fabrication Facility.

Before the MOX fuel can be used in significant quantities in a reactor, the utility must first obtain a license from the U.S. Nuclear Regulatory Commission (NRC) by verifying the performance of the fuel. This is done by making a small number of lead assemblies, or test quantities of fuel, and irradiating them in a reactor to confirm that they function safely and predictably.

Because the United States will not have the capability to produce MOX fuel until the planned U.S. facility is operating, NNSA made arrangements with the French firm Cogema to fabricate the lead assemblies using U.S. plutonium. By making the lead assemblies in France, NNSA will avoid a three to four-year program delay in obtaining an NRC license. The U.S. and Russian programs are proceeding roughly in parallel.

The U.S. plutonium arrived in France in October 2004. The fuel rods were fabricated at Cogema's Cadarache facility and were made into assemblies at Cogema's MELOX facility. The completed assemblies will be shipped back to the United States in time to be inserted into one of Duke Power's Catawba reactors during its scheduled spring 2005 maintenance and refueling outage.

Extensive arrangements have been made to ensure this material is adequately protected from theft or diversion. MOX fuel shipments between fuel fabrication facilities and nuclear reactors in Europe and Japan have been conducted safely for 15 years. Land transportation in France is handled by the existing safe and secure transport system developed for shipments of nuclear materials. The overseas shipments are conducted using specially designed ships, which include a number of special security features. Highly trained armed officers from the police force that protects nuclear facilities and materials in the United Kingdom provide on-board protection.

NNSA's Office of Secure Transportation transports the material in the United States. This office operates the special transport system designed to ensure the safe and secure transport of special nuclear material, nuclear weapons, weapons components and other sensitive nuclear material. Physical security arrangements include: use of unmarked armored transport-trailer rigs, highly trained armed federal agents, escort vehicles, and a variety of communication equipment.

MEDIA CONTACT:

For further information, contact Bryan Wilkes with NNSA Public Affairs at 202-586-7371.